EMS AGENCY: **Alameda County EMS**

CONTACT(S):   Colleen Campbell, ISS

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                                    (510) 628-5079
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        `   FAX (510) 465-5624

OVERVIEW: Trauma Registry database - approximately 400 data points per patient. Includes date from patient care reports which are entered at each trauma center along with E-Codes, Injury details, ISS, DX, TX, and Procedures, Length of stay, complications, Phase specific information (ED, ICU, etc.) And ICD-9 codes. Used to track care of trauma patients from the field through discharge from the hospital.

HOW DEVELOPED:(IN-HOUSE, PROPRIETARY, FUNDING SOURCE) In cooperation with LANCET Technology. Funding through the trauma system.

DATE IMPLEMENTED: August 1991

DATE LAST UPDATED: Monthly

DATA COLLECTION METHOD(S): Information from the PCR's (patient care reports), and the patient charts is abstracted and input at the Trauma Centers. I receiver monthly exports of data from each of the three Trauma Centers in Alameda.
Scene death information on trauma patients is abstracted under my supervision at the EMS office and input.
Information on deaths of trauma patients at receiving hospitals is abstracted under my supervision and input at the EMS office.

DATABASE PLATFORM: Windows

SOFTWARE TYPE:

VENDOR NAME: Lancet Technology

LINKED DATABASE?: (PREHOSPITAL, TRAUMA, BASE HOSPITAL, TRAFFIC RECORDS OR OTHER) No

PARTICIPATING IN STATE AGGREGATE DATA COLLECTION?(IF NOT, WHEN ANTICIPATED?) Not yet

DATABASE UTILIZATION:

Tracking trauma care in Alameda County
QA
Injury Prevention

FOR THOSE IN THE DEVELOPMENT STAGE, DATE PLANNED TO BE FUNCTIONAL:
Alameda County EMS is presently working on an RFP that will hopefully provide us with an organized plan to design and implement an integrated, comprehensive data management system which will allow us to participate in the state aggregated data collection process. The RFP is scheduled to go out in October 1998.

STRENGTHS OF SYSTEM: The Trauma Registry is user friendly, and flexible. Data points are easily added or changed, and any field can be reported on.

WEAKNESS(ES) OF SYSTEM: It only includes trauma patients. We have no database for the majority of patients who access the 9-1-1 system in Alameda County.

VALUABLE REPORTS: PLEASE GIVE A BRIEF DESCRIPTION AND ATTACH A SAMPLE REPORT IF POSSIBLE. See attached. I have included a list of all the data points collected in the Trauma Registry. Any of them can be reported upon.

VALUABLE DATA SYSTEM EXPERIENCES: PLEASE GIVE A BRIEF DESCRIPTION. I participated in the evaluation of two Trauma Registries in 1991 in order to compare and assess the capabilities of BATR and Trauma One. After the evaluation was made and Trauma One was chosen, I worked with Lancet to customize Trauma One and convert our old data. I presently manage the Trauma Registry for Alameda County, which includes all trauma data from the three Trauma Centers in addition to trauma scene deaths, trauma Receiving Hospital deaths, and trauma patients who are admitted to Receiving Hospitals.

OTHER DATA APPLICATIONS:
Certification database
Unusual Occurrence database
EMT-I Personnel database (new)
Receiving hospital transfer database (new)

WORD PROCESSING PROGRAM USED & VERSION (WordPerfect, Word, Other):
MSOffice 97
MS Word

COMMENTS/ SUGGESTIONS:

EMS AGENCY: **Fresno, Kings, Madera EMS**

CONTACT(S):   Daniel Lynch, Administrator
NAMES,TITLES&PHONES, EMAIL   P.O. Box 11867
ADDRESS & FAX   Fresno, CA 93775
                                                       209-445-3387
                                                       FKMEMS@FRESNO.CA.GOV

OVERVIEW: Fresno, Kings, Madera EMS collects data from several sources. These areas include: Dispatch Data, Prehospital Care Reports, trauma, defibrillation, hospital diversion and completing the process to collect first responder and hospital data. We intend to integrate these databases in order to develop reports and analysis which look at the whole picture from beginning to end.

HOW DEVELOPED:(IN-HOUSE, PROPRIETARY, FUNDING SOURCE) In-house. The project was originally funded through Federal now solely funded through County funds.

DATE IMPLEMENTED: July 1, 1995

DATE LAST UPDATED: February 1997

DATA COLLECTION METHOD(S): Prehospital Care Report - Scantron and Westech Trauma, dispatch, defibrillation, and hospital diversion data is manually input and downloaded into the respective database.

DATABASE PLATFORM:

SOFTWARE TYPE: Microsoft Access 2.0

VENDOR NAME:

LINKED DATABASE?: (PREHOSPITAL, TRAUMA, BASE HOSPITAL, TRAFFIC RECORDS OR OTHER) Prehospital Care Reports, dispatch, trauma, defibrillation, hospital diversion.

PARTICIPATING IN STATE AGGREGATE DATA COLLECTION?(IF NOT, WHEN ANTICIPATED?) Not currently, due to staffing problems.

DATABASE UTILIZATION: The database is used for continuing quality improvement, research, system design, education and training, and policy and protocol development.

FOR THOSE IN THE DEVELOPMENT STAGE, DATE PLANNED TO BE FUNCTIONAL:

STRENGTHS OF SYSTEM: Microsoft Access is a powerful program with many capabilities. It allows for the linkages of several databases. Because of Access, many people are already familiar with the program.

WEAKNESS(ES) OF SYSTEM: The system is only a strong as the information that is collected. We still depend on proper completion of the scantron and constantly spend time on missing data.

VALUABLE REPORTS: **PLEASE GIVE A BRIEF DESCRIPTION AND ATTACH A SAMPLE REPORT IF POSSIBLE.**

VALUABLE DATA SYSTEM EXPERIENCES: PLEASE GIVE A BRIEF DESCRIPTION. It is suggested that more than one person be involved and familiar with each of the programs. The one person who developed the database left our agency and we had to figure out the database from the beginning.

OTHER DATA APPLICATIONS: Certification Database - Microsoft Access

WORD PROCESSING PROGRAM USED & VERSION (WordPerfect, Word, Other): WordPerfect 5.2 which will be changing to Word.

COMMENTS/ SUGGESTIONS:

EMS AGENCY: **Imperial County EMS**

CONTACT(S): John Pritting, EMS Administrator
NAMES,TITLES&PHONES, EMAIL 935 Broadway
ADDRESS & FAX El Centro, CA 92243
(619) 352-9933
(619) 339-4468

OVERVIEW:

HOW DEVELOPED:(IN HOUSE, PROPRIETARY, FUNDING SOURCE) Developed by Mountain Valley EMS Agency, with grant funding.

DATE IMPLEMENTED: November 1993.

DATE LAST UPDATED: April 1995.

DATA COLLECTION METHOD(S): Patient Care Report Forms.

DATABASE PLATFORM: *FoxPro*.

SOFTWARE TYPE:

VENDOR NAME:

LINKED DATABASE?:(PREHOSPITAL, TRAUMA, BASE HOSPITAL, TRAFFIC RECORDS OR OTHER) Linked with base and receiving hospital and with primary ALS transport provider.

PARTICIPATING IN STATE AGGREGATE DATA COLLECTION?(IF NOT, WHEN ANTICIPATED?) Yes.

DATABASE UTILIZATION:

FOR THOSE IN THE DEVELOPMENT STAGE, DATE PLANNED TO BE FUNCTIONAL:

STRENGTHS OF SYSTEM:

WEAKNESS(ES) OF SYSTEM: Our main problem is receiving input from providers and hospitals thru data links system - system works better when EMS Agency enters data.

VALUABLE REPORTS: PLEASE GIVE A BRIEF DESCRIPTION AND ATTACH A SAMPLE REPORT IF POSSIBLE. Still experimenting.

VALUABLE DATA SYSTEM EXPERIENCES: PLEASE GIVE A BRIEF DESCRIPTION.

OTHER DATA APPLICATIONS:

WORD PROCESSING PROGRAM USED & VERSION (WordPerfect, Word, Other)**:**

COMMENTS/ SUGGESTIONS:

EMS AGENCY: **Kern County EMS**

CONTACT(S):   Russ Blind, Senior Coordinator
NAMES,TITLES&PHONES, EMAIL   1400 H Street
ADDRESS & FAX   Bakersfield, CA 93301
                                    (805) 861-3200

OVERVIEW: The Kern County "EMS-AIMS" Project entails collection from several data sources of the EMS system. Currently, only two facets of "EMS-AIMS" are active or in development, including transport provider patient records and reconfiguration of the "Bay Area" trauma registry. The transport provider patient records or "Per-Transport" project is the most extensive data source. It is a form-based data collection and image storage system, driven by *Cardiff-Teleform* software. Forms are completed, then faxed directly into *Teleform* or scanned. Minor corrections are made, then case data is transmitted to our x-base (*FoxPro*).

HOW DEVELOPED:(IN-HOUSE, PROPRIETARY, FUNDING SOURCE) State block grant funds, and county funds.

DATE IMPLEMENTED: February 14,1995

DATE LAST UPDATED: June 1997

DATA COLLECTION METHOD(S):   Form based system, software "reads" alpha, numeric and optical mark entries, compares with data dictionary and isolates questionable entries for correction. Once corrected, case data is referred to our x-base for query.

DATABASE PLATFORM: *FoxPro Visual 5.0*, and *Fox-Fire*

SOFTWARE TYPE:

VENDOR NAME:

LINKED DATABASE?: (PREHOSPITAL, TRAUMA, BASE HOSPITAL, TRAFFIC RECORDS OR OTHER) Currently working on linkage of prehospital transport data into a trauma registry.

PARTICIPATING IN STATE AGGREGATE DATA COLLECTION?(IF NOT, WHEN ANTICIPATED?) Yes. To a limited degree, waiting on installation of updated software (within 1 month) (2/97).

DATABASE UTILIZATION:

FOR THOSE IN THE DEVELOPMENT STAGE, DATE PLANNED TO BE FUNCTIONAL:
Our PCR-Transport data project started full scale on 07/01/98, so the wording related to the PCR project should be deleted from this section.

Add to this section: The Kern County Trauma Registry is pending implementation until designation of a Trauma Center within the jurisdiction.

STRENGTHS OF SYSTEM: Saves extensive time over manual data entry and provides flexibility in collection with reading of alpha and numeric characters.

WEAKNESS(ES) OF SYSTEM: Hand writing is a critical factor for proper reading and decreases correction time.

VALUABLE REPORTS: PLEASE GIVE A BRIEF DESCRIPTION AND ATTACH A SAMPLE REPORT IF POSSIBLE. Reports are being developed.

VALUABLE DATA SYSTEM EXPERIENCES: PLEASE GIVE A BRIEF DESCRIPTION.
1.) Importance of sound data dictionaries.
2.) User training and limitation of variation.

OTHER DATA APPLICATIONS:

WORD PROCESSING PROGRAM USED & VERSION (WordPerfect, Word, Other):

COMMENTS/ SUGGESTIONS:

EMS AGENCY: **Los Angeles County EMS**

CONTACT(S):   Virginia Hastings, EMS Administrator
NAMES,TITLES&PHONES, EMAIL   5555 Ferguson Drive, Suite 220
ADDRESS & FAX   Los Angeles, CA 90022
                                                   (213) 890-7542
                                                   VHASTINGS@DHS.CO.LA.CA.US
                                                   FAX: (213) 890-8528

OVERVIEW: Data Collection for the Los Angeles County Emergency Medical Services is the responsibility of the Trauma and Emergency Medicine Information System (TEMIS). Initially implemented in 1988, the system migrated to a more advanced software and hardware technology in January 1992. Through the use of unique patient identifiers, the care of a trauma victim can be tracked from the time of "911" dispatch to discharge from the trauma hospital. The TEMIS system captures data from trauma hospital base hospital and EMS provider agencies. Sample forms are attached.

The Los Angeles County EMS provider agencies send hard copies of the EMS form to LA County EMS on a monthly basis. Data from the hard copy are then entered by data entry personnel into TEMIS. The goal of this system is to have the EMTs and paramedics enter the information to improve accuracy. Currently, four public provider agencies and one private provider agency are on-line with TEMIS computers and have the capacity to generate numerous standard reports at their location and/or develop their own ad hoc reports.

All base hospitals currently capture their data elements form the Base Hospital Form. The data is then entered by data entry personnel at the base hospital and electronically uploaded to TEMIS every 24 hours. With each facility having TEMIS computers, each hospital site has the capacity to generate numerous standard reports at their location and/or develop their own ad hoc reports.

HOW DEVELOPED: Lancet Technology Incorporation through block grant funds, County funds, and Trauma Center fees.

DATE IMPLEMENTED: 1988; current software 1992

DATE LAST UPDATED: July 1997

DATA COLLECTION METHOD(S): EMS, base hospital, trauma hospital forms developed by the EMS Agency.

DATABASE PLATFORM:

Software Type: MS FoxPro
Vendor Name: Lancet version 3.3.

LINKED DATABASES?: (PRE HOSPITAL, TRAUMA, BASE HOSPITAL, TRAFFIC RECORDS OR OTHER)
Prehospital, trauma, base hospital.

PARTICIPATING IN STATE AGGREGATE DATA COLLECTION? (IF NOT, WHEN ANTICIPATED?) Yes, our agency is currently participating in submitting quarterly data reports to the State. 1997 to current is not available at this time due to incomplete data collection from Los Angeles City Fire Department.

DATABASE UTILIZATION: Los Angeles County EMS utilizes their integrated management information system for:

Continuous quality improvement	Media
Research	Quality improvement activities
System design	Identify injury prevention needs
Education and training	Budget negotiations
Policy and protocol development	Justification of resources
Injury prevention	Quality of care review
Planning and development	Identify problems, study the impact,
Report on past and present activities	strategize solutions, re-evaluate after
Study efficiency of EMS System	change, etc, etc, etc...

Tobacco Tax and SB 12/612 reimbursement program for Trauma Centers

FOR THOSE IN THE DEVELOPMENT STAGE, DATE PLANNED TO BE FUNCTIONAL:
N/A

STRENGTHS & WEAKNESS OF SYSTEM: A major strength of the program is its level of sophistication. While the program can be taught to individuals with a background in both hardware and software systems, because of the complexity of the program and limited County staff resources, Los Angeles County has elected to have Lancet support staff under contract. In addition, Los Angeles system (incorporating 3 large databases) requires ongoing program maintenance which we feel is better handled by individuals most familiar with the program.

VALUABLE REPORTS: PLEASE GIVE A BRIEF DESCRIPTION AND ATTACH A SAMPLE REPORT IF POSSIBLE.

- Resource utilization
- Evaluate scope of practice issues
- Compliance with LA policy/procedure
- Evaluation of trauma system, justification of cost associated with trauma care
- Destination decisions, diversion statistics
- Compliance with response, scene, and transport time policy and evaluate the need for additional resources
- Outcome comparisons with Standing Field Treatment Protocols

VALUABLE DATA SYSTEM EXPERIENCES: PLEASE GIVE A BRIEF DESCRIPTION.

- Complex review of trauma system utilizing "Probability of Survival" reports
- Ability to provide data to all EMS, Base Hospital, and Trauma Hospital providers, data no
- longer goes into a "black hole"
- Publish articles on our system (evaluation of trauma system, use of QI filters with trauma, etc.)
- Assist hospitals with making a decision as to whether to join the trauma system (currently working with Pomona Valley and Queen of the Valley)
- Alert paramedic provider agencies of the weaknesses and strengths with documentation that reflects patient care
- Evaluate Standing Field Treatment Protocol design and use by utilizing outcome data from receiving hospitals

OTHER DATA APPLICATIONS: N/A

WORD PROCESSING PROGRAM USED & VERSION: Word Perfect 6.1 (soon to be upgraded to 7.0)

EMS AGENCY: **Marin County EMS**

CONTACT(S):   Ardith Hamilton, Program Administrator
NAMES,TITLES&PHONES, EMAIL   (415) 499-6871, ahamilton@marin.org
ADDRESS & FAX   Jay Myhre, Technical Systems Support Analyst II
                                                         (415) 499-5011, jmyhre@marin.org
                                                         Fax: (415) 499-3747

OVERVIEW: The Marin County EMS Agency has collected prehospital care information electronically since 1988. With this system:
   Users enter and print prehospital care records at receiving hospitals, provider agencies, and the EMS office.
   Data is merged into and retrieved from the SQL Server from remote locations using Dial-Up networking. The server has multiple modems, permitting simultaneous access.
   Receiving hospitals retrieve date for ALS calls where the patient was delivered to them. A comparison of the treatment guideline (protocol) used is made against the emergency department outcome to determine if appropriate treatment was given by the paramedics. This information is then sent back to EMS where it is available for retrieval by the provider agency.
   Provider agencies use the retrieving hospital comparison of treatment guideline to ED outcome as a major component in their CQI program,
   Several commercial billing agencies retrieve patient care data from the SQL server to assist in preparing insurance/ patient billing.

HOW DEVELOPED:(IN-HOUSE, PROPRIETARY, FUNDING SOURCE) This system was developed in-house using input from provider agencies and paramedics. State funding was not used in its development and the County holds a copyright on the program.

DATE IMPLEMENTED: 1998

DATE LAST UPDATED: June 1998

DATA COLLECTION METHOD(S):
   Prehospital care data is entered into data collection forms on desktop PCs then merged into the EMS SQL Server database via dial-up networking.
   911 dispatch is downloaded from the County CAD and merged into then EMS SQL Server.

DATABASE PLATFORM: Marin County EMS uses a Client/ Server system - a relational database for the front-end and an SQL Server for the back-end.

SOFTWARE TYPE: Relational Database: Access 97, SQL Server: SQL Server 6.5**,** Spreadsheet: Excel 97
VENDOR NAME: Microsoft

LINKED DATABASE?: (PREHOSPITAL, TRAUMA, BASE HOSPITAL, TRAFFIC RECORDS OR OTHER)

PARTICIPATING IN STATE AGGREGATE DATA COLLECTION?(IF NOT, WHEN ANTICIPATED?) Yes

DATABASE UTILIZATION:
    Collect patient care data
    Print readable patient care record
    Create ad hoc and recurring reports
    Print monthly vehicle dispatch reports, to include provider contract compliance.
    Helicopter transport review
    Provide billing agencies patient care data
    Create monthly detailed general and treatment guideline audits
    Assess improvements in patient care
    Continuing education tracking
    Assist providers in doing their CQI

FOR THOSE IN THE DEVELOPMENT STAGE, DATE PLANNED TO BE FUNCTIONAL:

STRENGTHS OF SYSTEM:
    Provided at no cost to any EMS agency desiring a state of the art prehospital patient care system.
    System voluntarily adopted by all prehospital care providers and hospitals in the county.
    Ease of use requiring shorter in-service training time.
    Wide-area networking (WAN) permits extensive security provided by NT and SQL Servers and removes the need to transfer data files via diskette or modem.
    Providers and paramedics can perform their patient care CQI electronically.
    On site database and networking technical support analyst.

WEAKNESS(ES) OF SYSTEM: Requires at least half-time systems analyst position to maintain system. Analyst requires advanced knowledge of Microsoft Access 97 and SQL Server 6.5. In reality, this is not a weakness of the system, rather the reality of maintaining a good prehospital patient care system.

VALUABLE REPORTS: **PLEASE GIVE A BRIEF DESCRIPTION AND ATTACH A SAMPLE REPORT IF POSSIBLE.**
    Monthly vehicle reports (frequency, compliances, etc.)
    Helicopter transports
    Compliance with Marin County Policy and Procedures
    Paramedic CQI report
    General audits of data entry
    Specific audits of treatment guidelines (protocols)

VALUABLE DATA SYSTEM EXPERIENCES: PLEASE GIVE A BRIEF DESCRIPTION.

The capabilities and performance of the system greatly improved when we moved from a solely PC relational system to a Client-Server system using Access 97 as the front end and SQL Server 6.5 as the back end.

OTHER DATA APPLICATIONS:

Paramedic, MICN, and EMT-I accreditation/ certification/ authorization and continuing education tracking

WORD PROCESSING PROGRAM USED & VERSION (WordPerfect, Word, Other):

Microsoft Word 97

COMMENTS/ SUGGESTIONS:

Do not expect a working prehospital care database system to be maintenance free.

To provide a continuous user-friendly service, the system requires the availability of someone who can address user-issues as they arise and can modify the system as needed. This system is essentially updated each January, with minor modifications in July.

Equipment (PCs and printers) must be maintained, updated, and replaced as necessary.

EMS AGENCY: **Monterey County EMS**

CONTACT(S):   Chris LeVenton, EMS Administrator
NAMES, TITLES&PHONES, EMAIL   19065 Portola Drive, Ste. I
ADDRESS & FAX   Salinas, CA 93908
                                         (408) 755-5013
                                         MNTRYCOEMS@AOL.COM
                                         Fax: (408) 455-0680

OVERVIEW: Paper PCR & Hospital Outcome Report hand-keyed into computer database, which is then linked to ambulance CAD data. Paper "First Responder Records" are hand-keyed into a separate database, which has not yet been linked to any of the above information.

HOW DEVELOPED:(IN-HOUSE, PROPRIETARY, FUNDING SOURCE) In-house.

DATE IMPLEMENTED: Gradually over a ten year period.

DATE LAST UPDATED: 1998

DATA COLLECTION METHOD(S): See Above.

DATABASE PLATFORM: Q & A. dBASE

SOFTWARE TYPE:

VENDOR NAME:

LINKED DATABASE?: (PREHOSPITAL, TRAUMA, BASE HOSPITAL, TRAFFIC RECORDS OR OTHER) PCR, hospital outcome, CAD

PARTICIPATING IN STATE AGGREGATE DATA COLLECTION?(IF NOT, WHEN ANTICIPATED?) Yes.

DATABASE UTILIZATION: Regular (monthly) reports to system participants and ad hoc reports.

FOR THOSE IN THE DEVELOPMENT STAGE, DATE PLANNED TO BE FUNCTIONAL:

STRENGTHS OF SYSTEM: We have information from dispatch through discharge on almost all patients.

WEAKNESS(ES) OF SYSTEM: 1) Not all of the fields on the written PCR are transcribed into the database. 2) Ditto for the First Responder Records.

VALUABLE REPORTS: PLEASE GIVE A BRIEF DESCRIPTION AND ATTACH A SAMPLE REPORT IF POSSIBLE.

VALUABLE DATA SYSTEM EXPERIENCES: PLEASE GIVE A BRIEF DESCRIPTION.

OTHER DATA APPLICATIONS:

WORD PROCESSING PROGRAM USED & VERSION (WordPerfect, Word, Other)**:**
WordPerfect 5.1, 6.1; Word

COMMENTS/ SUGGESTIONS:

EMS AGENCY: **Mountain-Valley EMS**

CONTACT(S):   Steve Andriese, Executive Director
NAMES,TITLES&PHONES, EMAIL   1101 Standiford Ave., #D1
ADDRESS & FAX   Modesto, CA 95350
                                                         (209) 529-5085
                                                         ANDRIESE@AOL.COM
                                                         FAX: (209) 529-1496

OVERVIEW: Using the EMS Database System 4.1.

HOW DEVELOPED:(IN-HOUSE, PROPRIETARY, FUNDING SOURCE)
In-house, funded by block grant and county funds.

DATE IMPLEMENTED: February 2, 1992

DATE LAST UPDATED: August 1995.

DATA COLLECTION METHOD(S): Keyboard entry, and electronic imports.

DATABASE PLATFORM: *MS FoxPro 2.5/2.6 for DOS.*

SOFTWARE TYPE:

VENDOR NAME:

LINKED DATABASE?: (PREHOSPITAL, TRAUMA, BASE HOSPITAL, TRAFFIC RECORDS OR OTHER) Prehospital, hospital, CAD.

PARTICIPATING IN STATE AGGREGATE DATA COLLECTION?(IF NOT, WHEN ANTICIPATED?) Yes.

DATABASE UTILIZATION: Used for contact compliance evaluation, EMS system evaluation, policy and protocol development.

FOR THOSE IN THE DEVELOPMENT STAGE, DATE PLANNED TO BE FUNCTIONAL:

STRENGTHS OF SYSTEM: Strong linkage capability, intuitive interface, strong report generation.

WEAKNESS(ES) OF SYSTEM: Lacks trend reports, user definable fields.

VALUABLE REPORTS: **PLEASE GIVE A BRIEF DESCRIPTION AND ATTACH A SAMPLE REPORT IF POSSIBLE.**
1.) Response time compliance % shown for selected areas for a selected areas for a selected time period.
2.) Response time compliance % shown for selected areas to show comparison of monthly compliance..

VALUABLE DATA SYSTEM EXPERIENCES: **PLEASE GIVE A BRIEF DESCRIPTION.**

OTHER DATA APPLICATIONS: Utilities for utilizing ICD.9 to calculate ISS, probability of survival.

WORD PROCESSING PROGRAM USED & VERSION **(WordPerfect, Word, Other):**

COMMENTS/ SUGGESTIONS:

EMS AGENCY: **North Coast EMS**

CONTACT(S):   Larry Karsteadt, Executive Director
NAMES,TITLES&PHONES, EMAIL   86 E. Street
ADDRESS & FAX   Eureka, CA 95501
                                                                   (707) 445-2081
                                                                   COOR@NORTHCOAST.COM
                                                                   FAX: (707) 445-0443

OVERVIEW: The North Coast Emergency Medical Services Agency began implementation of the *Prehospital Care Reporting & Database System (PCR-DS)* in June 1992**.** This publicly funded program is cooperatively being enhanced and expanded throughout 17 Northern California counties. This prehospital system utilizes computer data entry points located in receiving hospitals and provider base stations for combined PCR generation and data entry. The data entry points generate a variety of audit and quality improvement reports in addition to CE tracking.

Modules located on the server provide custom access to quality improvement reports, certification issuance and tracking, and data for ad hoc reporting. A local EMS agency certification module was recently completed that tracks certification history, course information and prints certification cards. The latest version, PCR 97, is currently being tested within the region on upgraded computer hardware.

HOW DEVELOPED:(IN-HOUSE, PROPRIETARY, FUNDING SOURCE) In-house through public funds.

DATE IMPLEMENTED: June 1992.

DATE LAST UPDATED: May 26, 1997**.**

DATA COLLECTION METHOD(S): PC's located in hospitals and prehospital provider base stations.

DATABASE PLATFORM: PCR and Administrative Report Programs: *Microsoft Access 2.0*; automated communication system: *Visual Basic*.

SOFTWARE TYPE: Microsoft Access 2.0

VENDOR NAME:

LINKED DATABASE?: (PREHOSPITAL, TRAUMA, BASE HOSPITAL, TRAFFIC RECORDS OR OTHER) Certification.

PARTICIPATING IN STATE AGGREGATE DATA COLLECTION?(IF NOT, WHEN ANTICIPATED?)

DATABASE UTILIZATION: North Coast EMS plans to use their management information system for continuous quality improvement, system design, education and training, CE and certification tracking and policy and protocol development.

FOR THOSE IN THE DEVELOPMENT STAGE, DATE PLANNED TO BE FUNCTIONAL:

STRENGTHS OF SYSTEM:

WEAKNESS(ES) OF SYSTEM:

VALUABLE REPORTS: PLEASE GIVE A BRIEF DESCRIPTION AND ATTACH A SAMPLE REPORT IF POSSIBLE.

VALUABLE DATA SYSTEM EXPERIENCES: PLEASE GIVE A BRIEF DESCRIPTION.

OTHER DATA APPLICATIONS:

WORD PROCESSING PROGRAM USED & VERSION (WordPerfect, Word, Other)**:**

COMMENTS/ SUGGESTIONS:

EMS AGENCY: **Northern California EMS**

CONTACT(S):   Dan Spiess, Chief Executive Officer
NAMES,TITLES&PHONES, EMAIL   970 Executive Way
ADDRESS & FAX   Redding, CA 96002
                                                        (916) 221-7900
                                                        FAX: (916) 221-7544

OVERVIEW: The Nor-Cal Emergency Medical Services Agency began implementation of the Prehospital care Reporting & Database System (PCR-DS) in April 1994.   Initially developed at the North Coast EMS Agency, this publicly funded program is cooperatively being enhanced and expanded throughout 17 Northern California counties. This prehospital system utilizes computer data entry points located in receiving hospitals and provider base stations for combined PCR generation and data entry. The data entry points generate a variety of audit and quality improvement reports in addition to CE tracking. Transfer of data occurs automatically via modem to the central sever located at the Nor-Cal EMS Agency.

Modules located on workstations of the Nor-Cal local area network (LAN) provide custom access to quality improvement reports, certification issuance and tracking, and data for ad hoc reporting. A local EMS agency certification module was recently completed that tracks certification history, course information and prints certification cards and notification letters. Billing and trauma registry modules are currently under development. A sample PCR and reporting guidelines is enclosed in the Appendix. Nor-Cal EMS currently has block grant funding to develop a windows-based trauma registry to replace the Regional Trauma Registry.

HOW DEVELOPED:(IN-HOUSE, PROPRIETARY, FUNDING SOURCE) Block grant funding initially at North Coast EMS and subsequently at Nor-Cal EMS.

DATE IMPLEMENTED: 1990 at North Coast EMS/1994 at Nor-Cal EMS.

DATE LAST UPDATED: February 1, 1997.

DATA COLLECTION METHOD(S): Data collected remotely, entered on PCS located at hospitals and prehospital provider base stations. Data entered first hand by the EMT/Paramedic.

DATABASE PLATFORM: *Microsoft Access 2.0*, *Visual Basic*.

SOFTWARE TYPE: *Microsoft Access 2.0/97*

VENDOR NAME:

LINKED DATABASE?: (PREHOSPITAL, TRAUMA, BASE HOSPITAL, TRAFFIC RECORDS OR OTHER)   Prehospital, Trauma. Emergency room (this year).

PARTICIPATING IN STATE AGGREGATE DATA COLLECTION?(IF NOT, WHEN ANTICIPATED?) Yes.

DATABASE UTILIZATION: Nor-Cal EMS utilizes their management information system for continuous quality improvement, policy and protocol development, contract renewal, audit, education, training, research, system design, CE and certification tracking.

FOR THOSE IN THE DEVELOPMENT STAGE, DATE PLANNED TO BE FUNCTIONAL:

STRENGTHS OF SYSTEM: Single input/documentation, input by Paramedic (source).

WEAKNESS(ES) OF SYSTEM: Requires site administration, although minimal.

VALUABLE REPORTS: PLEASE GIVE A BRIEF DESCRIPTION AND ATTACH A SAMPLE REPORT IF POSSIBLE.
Protocol Audits - PLR audit by Protocol and PT type.
Audit Ratio - by training institution.
EMT Review - Summary of all prehospital activity by EMT.
Audit Summary - by Base Hospital.

VALUABLE DATA SYSTEM EXPERIENCES: PLEASE GIVE A BRIEF DESCRIPTION.
Participation and ownership of EMS Community is vital to the success of this type of system. As much as possible, try to standardize to one system rather than aggregating many systems.

OTHER DATA APPLICATIONS: EMT Registry/Certifications, Contact Manager (in progress), Base Hospital Radio Report, Billing Interface.

WORD PROCESSING PROGRAM USED & VERSION (WordPerfect, Word, Other):

COMMENTS/ SUGGESTIONS: Integrate use of data into EMS System daily operations as possible when expanding data systems - always link.

EMS AGENCY: **Orange County EMS**

CONTACT(S):   David Johnson, RN**,** EMS QI Coordinator
NAMES,TITLES&PHONES, EMAIL   405 West Fifth St., Ste. 301A
ADDRESS & FAX   Santa Ana, CA 92701
                                                             (714) 834-3125
                                                             FAX:(714) 834-6233
                                                             djohnson28@juno.com

OVERVIEW: The OCEMS agency implemented the management information system in July of 1984. Revelation (TM) was the database platform at that time. In 1990, the agency converted to DataEase (TM). This was developed in-house with consultants. It utilizes standardized forms. A data entry clerk key enters the data from forms submitted by hospitals and other sources. These data sources include Prehospital, Emergency Departments, and Trauma Registry.

HOW DEVELOPED:(IN-HOUSE, PROPRIETARY, FUNDING SOURCE) In-house through public funds.

DATE IMPLEMENTED: July 1, 1984

DATE LAST UPDATED: March 1996

DATA COLLECTION METHOD(S): Standardized forms (NCR) - Prehospital Care Reports, Base Hospital Reports, Trauma Registry, Hospital Transport Data Discharge.

DATABASE PLATFORM: DOS/ Windows

SOFTWARE TYPE: Excel, Word

VENDOR NAME:

LINKED DATABASE?: (PREHOSPITAL, TRAUMA, BASE HOSPITAL, TRAFFIC RECORDS OR OTHER) None

PARTICIPATING IN STATE AGGREGATE DATA COLLECTION?(IF NOT, WHEN ANTICIPATED?) No.

DATABASE UTILIZATION:

FOR THOSE IN THE DEVELOPMENT STAGE, DATE PLANNED TO BE FUNCTIONAL:

STRENGTHS OF SYSTEM:

WEAKNESS(ES) OF SYSTEM:

VALUABLE REPORTS: PLEASE GIVE A BRIEF DESCRIPTION AND ATTACH A SAMPLE REPORT IF POSSIBLE.

VALUABLE DATA SYSTEM EXPERIENCES: PLEASE GIVE A BRIEF DESCRIPTION.

OTHER DATA APPLICATIONS:

WORD PROCESSING PROGRAM USED & VERSION (WordPerfect, Word, Other)**:** Word 95 & 97, Office 98

COMMENTS/ SUGGESTIONS: The 3 Trauma Centers in Orange County use Trauma One from Lancet Technologies. It is available in both DOS & Windows but is used in the Windows environment in the region. Some hospitals are using DataEase, one is using Revelation, and others are using various databases such as Access.

Current Reports:
1. Air Ambulance Reports - to monitor the AA incidents and AA Prehospital patient care.
2. Autopsy Report - to identify trauma related deaths that went to a non-trauma PRC and evaluate the appropriateness of transport to the PRC.
3. Base Hospital Report - completed by the MICN at base with both hard copy and diskette sent to EMS.
4. Bypass Report - reports from all PCR's documenting the requested downtime and bypasses.
5. ETI Reports - Endotracheal Intubation/ Airway Management reports from the base hospitals documenting total attempts, number of successful ETI's, # of unsuccessful ETI's, # of candidates.
6. Hospital Discharge Data Summary - Outcome data from PRC ED departments.
7. Prehospital Care Report - field records for ALS patients sent by the PRC's.
8. Trauma Registry - from Trauma Center coordinators.

Future Pans:
Hoping to implement a relational database that interfaces with various systems and platforms in the EMS community. Windows and Windows NT are the operating systems that are being implemented as the standard in our Health Care Agency.

Some fire provider agencies are evaluating an alternative data collection method utilizing scanning technology.

EMS AGENCY: **Sacramento County EMS**

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NAMES,TITLES&PHONES, EMAIL   2)Preston Rausch, Administrative Services Officer
ADDRESS & FAX   (916) 875-9753
                                             3)Bruce Wagner, Chief (916) 875-9753

OVERVIEW: Selected data elements are manually extracted from all service provider PCRs and compiled on a personal computer (PC) based database. The database software allows the generation of reports which are analyzed to determine system efficiency and effectiveness and to identify possible areas in need of improvement.

HOW DEVELOPED:(IN-HOUSE, PROPRIETARY, FUNDING SOURCE) Software developed by Mountain Valley (formerly Alpine, Mother Lode, San Joaquin) EMS Agency and further customized in-house by contracted consultant.

DATE IMPLEMENTED: August 1, 1996

DATE LAST UPDATED: Monthly

DATA COLLECTION METHOD(S): Hand entry on to PCRs by providers; PCR copies supplied to EMS Agency contracted consultant by providers; consultant personnel hand enter selected elements from PCRs into PC based database.

DATABASE PLATFORM:

SOFTWARE TYPE: FoxPro based software called "EMS Datapro"

VENDOR NAME: developed by Mountain Valley EMS Agency

LINKED DATABASE?: (PREHOSPITAL, TRAUMA, BASE HOSPITAL, TRAFFIC RECORDS OR OTHER) No Links

PARTICIPATING IN STATE AGGREGATE DATA COLLECTION?(IF NOT, WHEN ANTICIPATED?) No; anticipate participation later this year

DATABASE UTILIZATION: Database used for analyses of system effectiveness and efficiency; listing of EMT-P contacts; ALS skills utilized; # of refusals of service; and # of deaths declared on scene; etc.

FOR THOSE IN THE DEVELOPMENT STAGE, DATE PLANNED TO BE FUNCTIONAL: N/A

STRENGTHS OF SYSTEM: Extensive information with hard copies of PCRs; focused audits; etc.

WEAKNESS(ES) OF SYSTEM: Labor intensive hand entry

VALUABLE REPORTS: **PLEASE GIVE A BRIEF DESCRIPTION AND ATTACH A SAMPLE REPORT IF POSSIBLE.** Of value to our Agency are the reports that give a broad picture of trends in the system. For example:

9) Skills success rates.
10)   Average ages of certain types of patients
11)   Average scene times
12)   Patient volumes for each provider and hospital
13)   Disposition percentages (i.e. ED, Released at Scene, Expired, etc.)

VALUABLE DATA SYSTEM EXPERIENCES: **PLEASE GIVE A BRIEF DESCRIPTION.**

Our experience has shown that there is a need for:

1) An internal policy for data collection management, storage, confidentiality**,** access, reports, etc.;
2) A commitment by the providers to submit the data and
3) The development of a system-wide approach which is acceptable to all participating organizations.

OTHER DATA APPLICATIONS: None at this time

WORD PROCESSING PROGRAM USED & VERSION (WordPerfect, Word, Other):

COMMENTS/ SUGGESTIONS: None at this time.

EMS AGENCY: **San Diego County EMS**

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                                                      San Diego, CA 92120
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OVERVIEW: San Diego County's Emergency Medical Services agency began implementation of the automated information system in 1984 with the computerized trauma registry and Medical Examiner's report, and the optically scanned prehospital patient record (PPR). The Quality Assurance Network (QANet) wide area network (WAN) was implemented in 1994. This network electronically links base hospitals, receiving hospitals, prehospital providers (EMTs and paramedics) and County EMS through either hard wires (56K lines) or modems. Transition to a complete electronic format with data initially entered into one database is in process. Currently there are linkages between the multiple databases so that the data can be compiled for analysis and reporting.

HOW DEVELOPED:(IN-HOUSE, PROPRIETARY, FUNDING SOURCE) In-house through public funds.

DATE IMPLEMENTED: Initially 1984, QANet in 1994

DATE LAST UPDATED: October, 1998

DATA COLLECTION METHOD(S): Hand entered "bubble" format PPR which is then optically scanned to Paradox Windows; PC entry (either point of contact or retrospective chart abstraction) of trauma registry at trauma centers into FoxPro which is then exported to a Paradox database at the EMS agency; PC entry at EMS by clerks of ME data into Paradox; PC entry by prehospital personnel into the QANet (Paradox) at hospital/provider agency.

DATABASE PLATFORM: PC based Borland C, Delphi & Paradox

SOFTWARE TYPE:

VENDOR NAME:

LINKED DATABASE?:(PREHOSPITAL, TRAUMA, BASE HOSPITAL, TRAFFIC RECORDS OR OTHER) Dispatch, prehospital (PPR), emergency departments (ED), trauma registry, Medical Examiner (ME), emergency medical technician/paramedic/ mobile intensive care nurse (EMT /PARAMEDIC/MICN) certification/accreditation/authorization databases are all linked via the QANet.
PARTICIPATING IN STATE AGGREGATE DATA COLLECTION?(IF NOT, WHEN ANTICIPATED) Yes.

DATABASE UTILIZATION: The databases are utilized for continuous quality improvement, research, injury surveillance, system design, education, contract monitoring, policy and protocol development, and certification tracking.

STRENGTHS OF SYSTEM: The strength of the system is that the QANet is a live, true-time data collection system to which all participants have access both for inputting data and retrieving their individual data.

WEAKNESSES OF SYSTEM: The weakness is that the legacy trauma registry, ME and scanned PPR systems have yet to be integrated into the QANet (planned to be completed in 1999). Although these databases currently can be linked, this process utilizes too many resources.

VALUABLE REPORTS: PLEASE GIVE A BRIEF DESCRIPTION AND ATTACH A SAMPLE REPORT IF POSSIBLE. *Prehospital Quarterly Reports*: These reports prepared for Advanced Life Support (ALS) and Basic Life Support (BLS) providers contain incidence data in aggregate and by provider agency. Data include run outcome, chief complaint, response time, geographic and demographic information.

Prehospital Annual Report: This report prepared for the EMS community contains general information on the EMS system, as well as aggregate run outcome, chief complaint, demographic, geographic and temporal data.

Trauma System Annual Report: This report is distributed widely to the medical community and the general public and contains incidence information on the total number of trauma patients, as well as detailed information on those patients who meet modified Major Trauma Outcome Study (MTOS) criteria for inclusion in the San Diego County Trauma Registry. This report contains demographic, geographic and temporal data by type of injury.

Sexual Assault Response Team (SART) Annual Report: This report contains information on the incidence of sexual assault evidentiary exams performed. Demographic, geographic, utilization, and judicial outcome data are reported.

Suicide Homicide Audit Committee (SHAC) Annual Report: This report to the County Board of Supervisors and widely distributed to the violence and injury prevention community contains information on homicides and suicides of youth ages 8-24. This report contains general information on the SHAC member agencies, victim data gathered during a multi agency review process and the Committee's findings and recommendations for violent death prevention. The analysis includes demographic, geographic, temporal, personal history and injury data.

Domestic Violence Audit Committee (DVAC) Annual Report (planned): This report to the County Board of Supervisors will contain information on domestic violence related deaths based on victim data gathered during a multi agency review process.

Injury Surveillance Annual Report: This report prepared for the injury prevention community utilizes information from multiple databases and contains data on injuries by level of severity, and demographic, geographic and temporal data by type of injury to identify populations at risk.

VALUABLE DATA SYSTEM EXPERIENCES: PLEASE GIVE A BRIEF DESCRIPTION.
Electronic Data Transmission: In 1994 San Diego County EMS began implementing electronic prehospital patient records through the QANet. With 8 base hospitals and over 30 agencies providing ALS and BLS care and responding to approximately 250,000 calls per year, this has been a monumental task. The biggest benefit of this system has been the availability of "real time" data for monitoring quality assurance.

Database Linkage: San Diego County EMS, working with the California Highway Patrol, completed a linkage between the Statewide Integrated Traffic Records System (SWITRS) data; prehospital, trauma and ME patient data; and GIS software to create detailed records for motor vehicle injury crash investigation. This Traffic Related Injury GIS Database contains geocoded traffic records of every injury crash that occurs within the County. Data points include crash details, violations, precedent events, site description and location, victim demographics and nature and severity of injuries.

Surveillance: San Diego County EMS is utilizing data currently collected by prehospital providers and the Trauma System to identify populations at risk and to monitor changes in incidence and rates in these populations. Additionally, the Traffic Related Injury GIS Database allows EMS to create maps of injury crashes by any specific data element or combination of elements such as pedestrian injuries occurring to school age children on weekdays between 2:00 and 5:00pm. The location of schools, parks and playgrounds can then be layered to determine the geographic significance of these locations. Because this system also incorporates satellite photography, an ortho photo image of the location can be created. The ortho photos have a resolution that allows one to view detail such as crosswalks, signage and obstructions.

Research and Evaluation: San Diego County EMS is currently involved in several research projects which include developing research methodology and protocols, designing data collection tools, collecting data, and evaluating and performing statistical analyses on results. In August, 1998, the Rapid Sequence Intubation (RSI) study was initiated, wherein EMT-Paramedics utilize paralytics to assist with intubation in a narrowly defined patient population.

OTHER DATA APPLICATIONS: PARADOX APPLICATIONS: EMS Electronic Bulletin Board on QANet, Prehospital Audit Committee Reports (PAC), Sexual Assault Response Tracking System (SART), Ambulance Provider Permit System (APPS), Trauma Tracking System (TTS), Medical Audit Committee Reports (MAC), Trauma Complication Database (MAC Stats), Motor Vehicle Crash Database (GM Project), Injury Surveillance System, Inventory Tracking System (ITS), Repairs Tracking System (RTS), First Responder Claims, and Expenditures and Revenue Tracking databases
EIS SOFTWARE APPLICATIONS: Regional Disaster Directory
FILEMAKER PRO APPLICATIONS: Domestic Violence Audit Committee Database (DVAC), and Suicide Homicide Audit Committee Database (SHAC)
GIS: Arcview

WORD PROCESSING PROGRAM USED & VERSION (WordPerfect, Word, Other): WordPerfect 6.1 & 7. Migrating to Word 7/8.

COMMENTS/ SUGGESTIONS:

EMS AGENCY: **San Francisco County EMS**

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NAMES,TITLES&PHONES, EMAIL   Mark Forrette, Quality Assurance Manager
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                                                         1540 Market Street, Suite 220
                                                         San Francisco, CA 94102
                                                         (415) 546-8736

OVERVIEW: San Francisco County Emergency Medical Services established their prehospital automated database system in July 1994. This system utilizes a combined patient care and data collection (bubble format) form, eliminating duplicate documentation.

Information is collected from dispatch, prehospital (ambulance), ED and outcome data, which are all linked for system wide analysis. Of special interest in this system are the numerous data linkages and pre hospital ICD-9 coding developed in-house. Since its inception this database has experienced multiple problems, which are detailed below.

The prehospital Patient Care Record (PCR) data is currently entered by the paramedics and EMTs on a Scantron® bubble form and read with an ink reader scanner. Significant amounts of incomplete data exists due to missing, inaccurate, or unreadable bubble codes. The present scanner does not sort good data from bad, so no assessments or feedback can be given on individual forms to paramedics unless the forms are manually sorted. Individual data fields are designed to accommodate multiple purposes, including treatment documentation, outcomes assessment, recording of demographic patient data and time recording. The fields are not mutually exclusive in many instances, making data analysis a challenge.

There are not identified mandatory fields. Even within existing data, compliance with data reporting for individual fields varies tremendously, from 100% reporting (with several fields) to <35% reporting for vital signs. Data elements are not designed to be verifiable (for example, insurance status), and are not duplicately requested from other sources (such as the hospital report of insurance status). Names are not included in the data base, and no method exists to unduplicate patients. Additionally, patient duplication is possible considering the nature of ambulance services. Some patients account for multiple ambulance dispatches over a short period of time.

Alternative methods of prehospital data capture are available. Currently on the market are "pen-based" notebook/notepad systems that allow superb data capture while being very user friendly. Moreover, these systems are forward thinking and allow advances in technology to be utilized. Examples include radio modems that allow direct downloading of dispatch CAD data when a unit is dispatched. The EMS Agency has established criteria and specifications for a field based data management system. We are pursuing implementation of an efficient cost effective system that meets the critical needs of the ambulance providers as well as the EMS Agency.
The conclusion is that the traditional paper method of collecting data in the out-of-hospital environment is inefficient, costly, and is not a good use of the paramedic's time or skills. In addition

legally required fields are not completed and there is no simple means to review each chart for completeness.

HOW DEVELOPED:(IN-HOUSE, PROPRIETARY, FUNDING SOURCE) In-house through block grant and county funds.

DATE IMPLEMENTED: July 1, 1994.

DATE LAST UPDATED: August 1996.

DATA COLLECTION METHOD(S): Prehospital Patient Record Form (scanable).

DATABASE PLATFORM: *MS FoxPro 2.5*.

SOFTWARE TYPE:

VENDOR NAME:

LINKED DATABASE?: (PREHOSPITAL, TRAUMA, BASE HOSPITAL, TRAFFIC RECORDS OR OTHER) Databases are linked by Dispatch, Prehospital (ambulance), ED and outcome records.

PARTICIPATING IN STATE AGGREGATE DATA COLLECTION?(IF NOT, WHEN ANTICIPATED?) Yes, our agency is currently participating in submitting quarterly data reports to the State.

DATABASE UTILIZATION: The City and County of San Francisco EMS Agency utilizes their heavily integrated management information system for continuous quality improvement, research, system design, education and training and policy and protocol development.

FOR THOSE IN THE DEVELOPMENT STAGE, DATE PLANNED TO BE FUNCTIONAL: In July 1997, the DPH Paramedic Division will merge with the San Francisco Fire Department. By October, the fire department will start using a pen-base computer unit on the field for capturing patient information. This method will strengthen both our data capturing ability and data validity.

STRENGTHS & WEAKNESS OF SYSTEM:

The Weakness Under Current System

1. Hospital data 10%-30% missing   primary link field.
2. Validity problem with scanable PCRs.
3. Field definitions vary across databases.
4. Data incompletely collected on essential fields in all databases.

The Strengths Under Current System

1. Close to 100% data submission compliance from hospitals and ambulance providers
2. Expandability, with technological advances.

VALUABLE REPORTS: **PLEASE GIVE A BRIEF DESCRIPTION AND ATTACH A SAMPLE REPORT IF POSSIBLE.** Since we have data validity problems we cannot generate any usable reports. This problem should be repaired after the pen-base system takes effect.

VALUABLE DATA SYSTEM EXPERIENCES: PLEASE GIVE A BRIEF DESCRIPTION.
None. Because of data validity problems with our current database collection method.

OTHER DATA APPLICATIONS: Pen-based computer system for prehospital data collection is planned.

WORD PROCESSING PROGRAM USED & VERSION (WordPerfect, Word, Other):

COMMENTS/ SUGGESTIONS:
1. Simplify data collection.
2. Build in quality check mechanism to validate data on a frequent basis.

EMS AGENCY: **San Joaquin County EMS**

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ADDRESS & FAX   P.O. Box 1020
                                                   Stockton, CA 95201
                                                   (209) 468-6818
                                                   FAX: (209) 468-6725

OVERVIEW: EMS Database System Ver 4.0; remote access network including agency, ALS fire, Ambulance Providers and Hospitals.

HOW DEVELOPED:(IN-HOUSE, PROPRIETARY, FUNDING SOURCE) Used public domain system, created by Mountain-Valley EMS using EMSA special project funds.

DATE IMPLEMENTED: FY 93/94.

DATE LAST UPDATED: Improved import tracking system completed 11/96.

DATA COLLECTION METHOD(S): Keyboard data entry is done by providers and hospitals who then upload data to the agency. AMR submits EMSCAN data via disk.

DATABASE PLATFORM: *FoxPro 2.6 for DOS*.

SOFTWARE TYPE:

VENDOR NAME:

LINKED DATABASE?: (PREHOSPITAL, TRAUMA, BASE HOSPITAL, TRAFFIC RECORDS OR OTHER) Prehospital, Receiving hospital.

PARTICIPATING IN STATE AGGREGATE DATA COLLECTION?(IF NOT, WHEN ANTICIPATED?) Yes.

DATABASE UTILIZATION: Supports QI efforts of Quality Liaison Council and EMS Liaison Committee.

FOR THOSE IN THE DEVELOPMENT STAGE, DATE PLANNED TO BE FUNCTIONAL:

STRENGTHS OF SYSTEM: Strong query and report capability.

WEAKNESS(ES) OF SYSTEM: Various difficulties in trying to aggregate data from some many sources.

VALUABLE REPORTS: **PLEASE GIVE A BRIEF DESCRIPTION AND ATTACH A SAMPLE REPORT IF POSSIBLE.** Many reports generated by the system are useful for answering many different questions.

VALUABLE DATA SYSTEM EXPERIENCES: **PLEASE GIVE A BRIEF DESCRIPTION.**

OTHER DATA APPLICATIONS:

WORD PROCESSING PROGRAM USED & VERSION **(WordPerfect, Word, Other):**

COMMENTS/ SUGGESTIONS:

EMS AGENCY: **San Luis Obispo EMS**

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                                                         (805) 564-8728
                                                         SLOEMSA@FIX.NET
                                                         FAX: (805) 546-8736

OVERVIEW: All San Luis Obispo County Paramedic Ambulance providers and most Paramedic Fire Departments are participating in a pilot to link patient care data collected by prehospital personnel with treatment and outcome data provided by receiving Emergency Departments. Two different electronic data collection systems are currently being used. The first to be implemented utilizes customized EMS reporting software furnished by Digital Objectives running on the Newton Pen-based PDA. The second system has been designed specifically for this project by AMBPAC, and used laptop computers to collect detailed patient assessment and treatment information. Both systems permit printing reports at the emergency departments on the prehospital assessment and treatment rendered by the paramedics. A central database is maintained at the EMS Agency for statistical reporting, quality improvement, and research purposes. The next phase of the project will attempt to integrate emergency department treatment data from hospital computer systems into the database to permit tracking patient treatment and outcome from EMS response through ED discharge.

The ultimate goal of this project is to link all available data from dispatch (CAD) through emergency department discharge in order to assess the effectiveness of prehospital and emergency department care, and to assist in policy and procedure development.

HOW DEVELOPED:(IN-HOUSE, PROPRIETARY, FUNDING SOURCE) Design of project-specific hardware and software, and customization of proprietary products.

DATE IMPLEMENTED: Original project implemented June 1, 1995. Current project concept implemented August 1, 1996.

DATE LAST UPDATED:

DATA COLLECTION METHOD(S): Data entry by paramedics using hand held pen-base computers and laptops.

DATABASE PLATFORM: *Microsoft Access-based host database designed by AMBPAC*.

SOFTWARE TYPE:

VENDOR NAME:
LINKED DATABASE?: (PREHOSPITAL, TRAUMA, BASE HOSPITAL, TRAFFIC RECORDS OR OTHER) First Responder (ALS), Ambulance (ALS), and ED outcome.

PARTICIPATING IN STATE AGGREGATE DATA COLLECTION?(IF NOT, WHEN ANTICIPATED?) Not at present.

DATABASE UTILIZATION: CQI, system design and management, education and training, research, and policy and protocol development.

FOR THOSE IN THE DEVELOPMENT STAGE, DATE PLANNED TO BE FUNCTIONAL:

STRENGTHS OF SYSTEM:

WEAKNESS(ES) OF SYSTEM:

VALUABLE REPORTS: PLEASE GIVE A BRIEF DESCRIPTION AND ATTACH A SAMPLE REPORT IF POSSIBLE.

VALUABLE DATA SYSTEM EXPERIENCES: PLEASE GIVE A BRIEF DESCRIPTION.

OTHER DATA APPLICATIONS:

WORD PROCESSING PROGRAM USED & VERSION (WordPerfect, Word, Other):

COMMENTS/ SUGGESTIONS:

EMS AGENCY: **San Mateo County EMS**

CONTACT(S):   Barbara Pletz, Administrator/
NAMES,TITLES&PHONES, EMAIL   Patti Lenvik, Program Coordinator
ADDRESS & FAX   225 37th Ave.
                                                  San Mateo, CA 94403
                                                  (650) 573-2564
                                                  (650) 573-229 (fax)

OVERVIEW: The San Mateo County EMS Agency is in the process of upgrading their prehospital management information system to meet the current and future demands of EMS. We recently tested an electronic prehospital PCR and data collection program, but we are still unsure which software program will be used in our county. We are currently in an RFP process and when the new contract begins, a new electronic data system will be implemented. Information will be collected from fire first responders, ambulance, hospital emergency departments, and dispatch resources.

HOW DEVELOPED:(IN-HOUSE, PROPRIETARY, FUNDING SOURCE) The ambulance contractor will provide an electronic data collection system that meets the approval of the EMS Agency.

DATE IMPLEMENTED: Proposed date of implementation is January 1999, when the new contract begins.

DATE LAST UPDATED: N/A

DATA COLLECTION METHOD(S): Planned electronic PCRs on desktop computers for fire first responders and hand held computers for ambulances. Data will be collected from the CAD and paramedics on a real time basis and 'dumped' into a server.

DATABASE PLATFORM:

SOFTWARE TYPE: Windows and Microsoft Access is preferred.

VENDOR NAME: No vendor has been selected yet.

LINKED DATABASE?: (PREHOSPITAL, TRAUMA, BASE HOSPITAL, TRAFFIC RECORDS OR OTHER) CAD, first fire responder, ambulance and hospital emergency departments.

PARTICIPATING IN STATE AGGREGATE DATA COLLECTION?
(IF NOT, WHEN ANTICIPATED?) No. Have no current functioning database or data collection methods. Plan to resume reporting to State in 1999.

DATABASE UTILIZATION: Intended for CQI, system design, education and training, and policy & protocol development.

FOR THOSE IN THE DEVELOPMENT STAGE, DATE PLANNED TO BE FUNCTIONAL:
Early 1999

STRENGTHS OF SYSTEM: N/A

WEAKNESS(ES) OF SYSTEM: N/A

VALUABLE REPORTS: PLEASE GIVE A BRIEF DESCRIPTION AND ATTACH A SAMPLE REPORT IF POSSIBLE. N/A

VALUABLE DATA SYSTEM EXPERIENCES: PLEASE GIVE A BRIEF DESCRIPTION. N/A

OTHER DATA APPLICATIONS: N/A

WORD PROCESSING PROGRAM USED & VERSION (WordPerfect, Word, Other): N/A

COMMENTS/ SUGGESTIONS:

EMS AGENCY: **Santa Barbara County EMS**

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                                                   Phone: (805) 681-5274
                                                   FAX: (805) 681-5142

OVERVIEW: Santa Barbara County Emergency Medical Services Agency uses a proprietary database from Lancet Technology, Inc. Information is collected on scannable forms by American Medical Response and sent to us via modem. We currently collect information only from AMR who responds to 90%+ of all ALS calls. We plan to expand our data collection capabilities to include all ALS providers this year.

HOW DEVELOPED:(IN-HOUSE, PROPRIETARY, FUNDING SOURCE) Proprietary software purchased through EMSA grant funds.

DATE IMPLEMENTED: June 1, 1995

DATE LAST UPDATED: N/A

DATA COLLECTION METHOD(S): Scannable forms converted to our system.

DATABASE PLATFORM:

SOFTWARE TYPE: PC-based system, windows

VENDOR NAME: Lancet Technology, Inc.

LINKED DATABASE?: (PREHOSPITAL, TRAUMA, BASE HOSPITAL, TRAFFIC RECORDS OR OTHER) Plan to upgrade prehospital system to link with emergency department and trauma system data. We anticipated establishing such a link this fiscal year - 1998/99.

PARTICIPATING IN STATE AGGREGATE DATA COLLECTION?(IF NOT, WHEN ANTICIPATED?) Yes, limited report, as we are not presently collecting all state aggregated data fields.

DATABASE UTILIZATION: CQI, state reports, trauma and medical treatment, research, injury prevention, education and training.

FOR THOSE IN THE DEVELOPMENT STAGE, DATE PLANNED TO BE FUNCTIONAL: N/A

STRENGTHS OF SYSTEM: Ability to develop ad-hoc reports.

WEAKNESS(ES) OF SYSTEM:
        Data needs to be converted from AMR data system into Lancet system.
        One-to-two month delay in receipt of current data
        Data only available from AMR (90% of calls), not all system ALS providers

VALUABLE REPORTS: **PLEASE GIVE A BRIEF DESCRIPTION AND ATTACH A SAMPLE REPORT IF POSSIBLE.** Chest pain study to support CQI process; base hospital call volume.

VALUABLE DATA SYSTEM EXPERIENCES: PLEASE GIVE A BRIEF DESCRIPTION. Use of system information at various community assessment committees, including the County's Childhood Death review team meetings.

OTHER DATA APPLICATIONS: Collaboration with Drug and Alcohol program to identify trends and local needs by *Ambulance Service Areas.* Information obtained through data system is helpful for grant writing.

WORD PROCESSING PROGRAM USED & VERSION (WordPerfect, Word, Other): Lancet runs on windows platform.

COMMENTS/ SUGGESTIONS:
The support of EMSAAC with specific data training has been very helpful.

Links will be established from the prehospital to emergency department and trauma registry through EMS Authority grant funding this fiscal year 98/99.

We will look at the feasibility of collecting regional data: Ventura County, Santa Barbara County, and San Luis Obispo County.

EMS AGENCY: **Sierra-Sacramento Valley EMS**

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NAMES,TITLES&PHONES, EMAIL   3853 Taylor Rd., Ste. G
ADDRESS & FAX   Loomis, CA 95650
                                      (916) 652-3690
                                      (916) 652-8067 (FAX)

OVERVIEW: The prehospital data collection system (EMScan) currently in use has been very successful in our region. AMR has a mirror-image of this system, making comparative data available. The software was purchased through grant funding in 1993.

HOW DEVELOPED:(IN-HOUSE, PROPRIETARY, FUNDING SOURCE) Special Projects Grant Funding.

DATE IMPLEMENTED: May 1993.

DATE LAST UPDATED: This program is continually updated. The DOS version will soon be available in the Windows format. Revisions to the scannable data sheets occurs annually.

DATA COLLECTION METHOD(S): Scannable portion of the PCR (enclosed) is downloaded from remote sites daily.

DATABASE PLATFORM: C++

SOFTWARE TYPE:

VENDOR NAME: Doug Brown, EMS Data Systems, Inc., 4141 N. Granite Reef Rd., Scottsdale, AZ 85251

LINKED DATABASE?: (PREHOSPITAL, TRAUMA, BASE HOSPITAL, TRAFFIC RECORDS OR OTHER) Trauma and currently have a project in process to link ED outcome data with prehospital data base.

PARTICIPATING IN STATE AGGREGATE DATA COLLECTION?(IF NOT, WHEN ANTICIPATED?) Yes.

DATABASE UTILIZATION: QI, Medical Control Committee, Trauma committee, helicopter utilization, medication usage, ground provider unit utilization, individual paramedic skills.

FOR THOSE IN THE DEVELOPMENT STAGE, DATE PLANNED TO BE FUNCTIONAL:

STRENGTHS OF SYSTEM: Ease of use, reliability, timeliness, cost effective.

WEAKNESS(ES) OF SYSTEM: Data collection elements must be changed on the scannable form. Due to the cost of the forms, providers are willing to make changes on an annual basis only.

VALUABLE REPORTS: **PLEASE GIVE A BRIEF DESCRIPTION AND ATTACH A SAMPLE REPORT IF POSSIBLE.**
- Unit Utilization - provides daily and hourly unit utilization for each unit for stationing purposes, shows response times.
- Medical - shows ALS and BLS skills by provider, individual, month, day, year.
- Trauma - a matrix of location and type of trauma injury.
- Admission - the number of patients each hospital received.
- Treatment - type of skills performed.
- Individual Performance - skills and medications administered by each paramedic.
- Custom - allows user to pick and choose data elements individually or in combination for any time period.

VALUABLE DATA SYSTEM EXPERIENCES: **PLEASE GIVE A BRIEF DESCRIPTION.** This system allows the administrator to determine which data collection elements are mandatory or must trigger another element (i.e., if MVC then safety devices must be marked). The data on responses occurring one day prior are available for analysis. The software developer has successfully implemented linkages with other systems in our region. There is very little downtime in the field to complete the form and the system is very reliable.

OTHER DATA APPLICATIONS: Trauma data collection system, Collector, developed by Tri-Analytics, Inc.

WORD PROCESSING PROGRAM USED & VERSION **(WordPerfect, Word, Other):**
WordPerfect 6.1
Word is available but not currently in use.

COMMENTS/ SUGGESTIONS:

EMS AGENCY: **Solano County EMS**

CONTACT(S):   Michael Frenn, EMS Administrator
NAMES,TITLES&PHONES, EMAIL   1735 Enterprise Dr., Bldg 3, MS3-110
ADDRESS & FAX   Fairfield, CA 94533
                                (707) 421-6685
                                FAX: (707) 421-6682

OVERVIEW: Dbase IV, captures approximately 60 fields per second. Pre-designed indexes and reported queries.

HOW DEVELOPED:(IN-HOUSE, PROPRIETARY, FUNDING SOURCE) In-house programmer.

DATE IMPLEMENTED: July 1, 1992.

DATE LAST UPDATED: June 10, 1994.

DATA COLLECTION METHOD(S): Manual by field providers; disc download to agency.

DATABASE PLATFORM: *Borland dBase IV*

SOFTWARE TYPE:

VENDOR NAME:

LINKED DATABASE?: (PREHOSPITAL, TRAUMA, BASE HOSPITAL, TRAFFIC RECORDS OR OTHER) To GIS.

PARTICIPATING IN STATE AGGREGATE DATA COLLECTION?(IF NOT, WHEN ANTICIPATED?) Not at present.

DATABASE UTILIZATION:

FOR THOSE IN THE DEVELOPMENT STAGE, DATE PLANNED TO BE FUNCTIONAL:

STRENGTHS OF SYSTEM:

WEAKNESS(ES) OF SYSTEM:

VALUABLE REPORTS: PLEASE GIVE A BRIEF DESCRIPTION AND ATTACH A SAMPLE REPORT IF POSSIBLE.
VALUABLE DATA SYSTEM EXPERIENCES: PLEASE GIVE A BRIEF DESCRIPTION.

OTHER DATA APPLICATIONS:

WORD PROCESSING PROGRAM USED & VERSION (WordPefect, Word, Other)**:**

COMMENTS/ SUGGESTIONS: Our system is nearly crashed and is in desperate need of revision.

EMS AGENCY: **Sonoma/Mendocino/Napa EMS**

CONTACT(S):   Kent Coxon, EMS Administrator
NAMES,TITLES&PHONES, EMAIL   Jim Adamski, MIS Coordinator
ADDRESS & FAX   Bonny Martignoni, Napa EMS Coordinator
                                   1030 Center Drive, Ste. D
                                   Santa Rosa, CA 95403-2067
                                   (707) 525-6501

OVERVIEW: The Sonoma, Mendocino County Emergency Medical Services Agency began implementation of the *Prehospital Care Reporting & Database System* (PCR-DS) in June 1995. Initially developed at the North Coast EMS Agency and expanded in the Nor-CAl EMS region, this publicly funded program is cooperatively being expanded through 17 Northern California counties. This prehospital system utilizes computer data entry points located in receiving hospitals and provider base stations for combined PCR generation and data entry. The data entry points generate a variety of audit and quality improvement reports in addition to CE tracking. Transfer of data occurs automatically via modem to the central server located at the Sonoma/Mendocino and Napa EMS Agencies.

Modules located on workstations of the Sonoma, Mendocino County server provide custom access to quality improvement reports, certification issuance and tracking, and data for ad hoc reporting. A local EMS agency certification module was recently completed that tracks certification history, course information and prints certification cards and notification letters. A sample PCR and reporting guidelines is enclosed in Appendix D.

HOW DEVELOPED:(IN-HOUSE, PROPRIETARY, FUNDING SOURCE) In-house through public funds.

DATE IMPLEMENTED: June 1995 (Sonoma/Mendocino) January 1998 (Napa)

DATE LAST UPDATED: June 1997

DATA COLLECTION METHOD(S): PC's located in hospitals and prehospital provider base stations.

DATABASE PLATFORM: PCR and Administrative Report Programs; *Microsoft Access 2.0*; automated communication system: *Visual Basic.*

SOFTWARE TYPE:

VENDOR NAME:

LINKED DATABASE?: (PREHOSPITAL, TRAUMA, BASE HOSPITAL, TRAFFIC RECORDS OR OTHER) Certification.

PARTICIPATING IN STATE AGGREGATE DATA COLLECTION?(IF NOT, WHEN ANTICIPATED?)

DATABASE UTILIZATION: Sonoma, Mendocino County EMS utilizes their management information system for continuous quality improvement, research, system design, education and training, CE and certification tracking, contract renewal, and policy and protocol development.

FOR THOSE IN THE DEVELOPMENT STAGE, DATE PLANNED TO BE FUNCTIONAL:

STRENGTHS OF SYSTEM:

WEAKNESS(ES) OF SYSTEM:

VALUABLE REPORTS: PLEASE GIVE A BRIEF DESCRIPTION AND ATTACH A SAMPLE REPORT IF POSSIBLE.

VALUABLE DATA SYSTEM EXPERIENCES: PLEASE GIVE A BRIEF DESCRIPTION.

OTHER DATA APPLICATIONS:

WORD PROCESSING PROGRAM USED & VERSION (WordPerfect, Word, Other):

COMMENTS/ SUGGESTIONS:
EMS AGENCY: **Tuolumne County EMS**

CONTACT(S):   Dan Burch
NAMES,TITLES&PHONES, EMAIL   20111 Cedar Rd North
ADDRESS & FAX   Sonora, CA 95370
                                                 209-533-7405 (voice)
                                                 209-533-7406 (fax)
                                                 tcems@aol.com

OVERVIEW: We use EMS DataPro Version 1.8 developed by CompuCousel Consulting for the State EMS Authority through a special project awarded to the Mountain-Valley EMS Agency.

HOW DEVELOPED:(IN-HOUSE, PROPRIETARY, FUNDING SOURCE)

DATE IMPLEMENTED: EMS DBS started July 1993 upgrade to EMS DP 199_

DATE LAST UPDATED: Software upgrades from CompuCounsel are release about every 2 months.

DATA COLLECTION METHOD(S): CAD, PCR data entry

DATABASE PLATFORM: Visual FoxPro 5

SOFTWARE TYPE: DBS

VENDOR NAME: Microsoft

LINKED DATABASE?: (PREHOSPITAL, TRAUMA, BASE HOSPITAL, TRAFFIC RECORDS OR OTHER) Dispatch, First Response, Ambulance, Base Hosp., Rec. Hosp.

PARTICIPATING IN STATE AGGREGATE DATA COLLECTION?(IF NOT, WHEN ANTICIPATED?) Yes

DATABASE UTILIZATION: QA/QI, Planning, System Evaluation

FOR THOSE IN THE DEVELOPMENT STAGE, DATE PLANNED TO BE FUNCTIONAL:

STRENGTHS OF SYSTEM: Best report generator ever created for EMS

WEAKNESS(ES) OF SYSTEM: Installation requires technical support of Intermediate knowledge of Windows.

VALUABLE REPORTS: PLEASE GIVE A BRIEF DESCRIPTION AND ATTACH A SAMPLE REPORT IF POSSIBLE. System can report on any and all fields entered. SWADS reports are fully supported including response time and age breakdowns.

VALUABLE DATA SYSTEM EXPERIENCES: PLEASE GIVE A BRIEF DESCRIPTION. We have been using this product since 1993 without any difficulty.

OTHER DATA APPLICATIONS:

WORD PROCESSING PROGRAM USED & VERSION (WordPerfect, Word, Other):
Word Perfect 8

COMMENTS/ SUGGESTIONS:

EMS AGENCY: **Ventura County EMS**

CONTACT(S):   Barbara Brodfuehrer, EMS Administrator
NAMES,TITLES&PHONES, EMAIL   John Mikovitz
ADDRESS & FAX   2323 Knoll Drive
                                                                  Ventura, Ca 93003
                                                                  (805) 677-5270
                                                                  BARBARA.BRODFUEHRER@MAIL.CO.
                                                                  VENTURA.CA.US

OVERVIEW: The Ventura County Emergency Medical Services Agency is currently implementing a proprietary database from "*ScanImage*" utilizes a single form for PCR reporting and data collection, eliminating the need for duplicate reporting. Once on-line, information will be collected from prehospital (ambulance) sources. Please contact Barbara Brodfuehrer for progress on their system.

HOW DEVELOPED:(IN-HOUSE, PROPRIETARY, FUNDING SOURCE) Purchase of proprietary product.

DATE IMPLEMENTED: June 1, 1995

DATE LAST UPDATED: N/A

DATA COLLECTION METHOD(S): Standardized Scantron Forms**.**

DATABASE PLATFORM: dBASE

SOFTWARE TYPE:

VENDOR NAME:

LINKED DATABASE?: (PREHOSPITAL, TRAUMA, BASE HOSPITAL, TRAFFIC RECORDS OR OTHER) None.

PARTICIPATING IN STATE AGGREGATE DATA COLLECTION?(IF NOT, WHEN ANTICIPATED?) Yes, we have been sending data as requested.

DATABASE UTILIZATION:

FOR THOSE IN THE DEVELOPMENT STAGE, DATE PLANNED TO BE FUNCTIONAL:

STRENGTHS OF SYSTEM:

WEAKNESS(ES) OF SYSTEM: Accuracy of data entry at front end.

VALUABLE REPORTS: PLEASE GIVE A BRIEF DESCRIPTION AND ATTACH A SAMPLE REPORT IF POSSIBLE.

VALUABLE DATA SYSTEM EXPERIENCES: PLEASE GIVE A BRIEF DESCRIPTION.

OTHER DATA APPLICATIONS:

WORD PROCESSING PROGRAM USED & VERSION (WordPerfect, Word, Other)**:**

COMMENTS/ SUGGESTIONS: Currently reviewing other systems. We have found that correcting errors almost negates the functionality of the system. It takes weeks to return the forms to the provider, get them corrected and resubmitted.